

SOME NEW SPECIES OF *STENETRIUM* FROM WESTERN AUSTRALIA.

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(Communicated by T. C. Roughley.)

(Twenty-five Text-figures.)

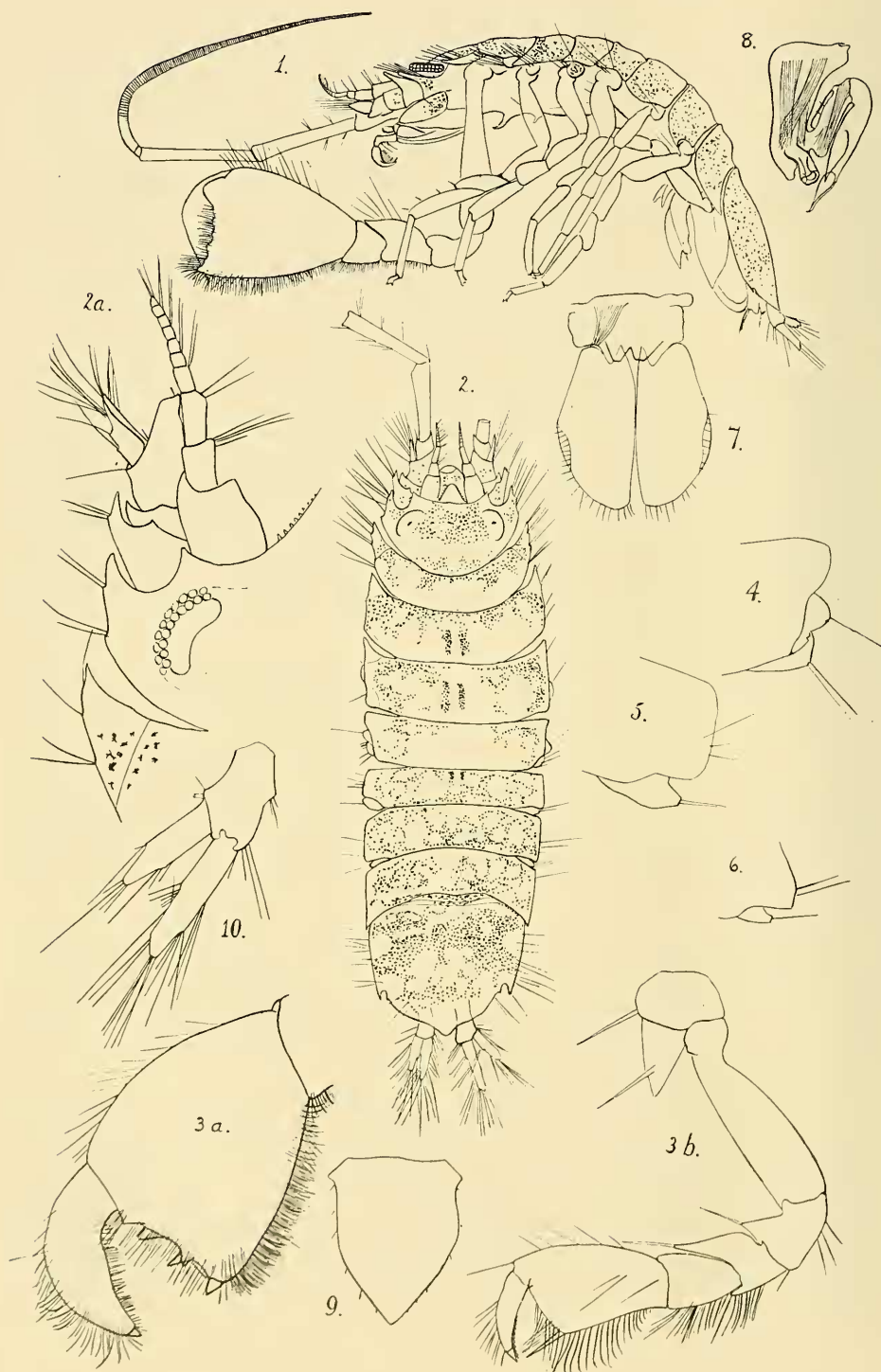
[Read 31st July, 1929.]

During the Autumn (1928) Short Vacation, a Field Instruction class was held at Dongarra. Amongst the material obtained during the course of field work were several specimens of a very fragile Isopod. These were found crawling upon seaweeds scraped from the piles of a disused pier some six feet or more below the surface of the water. Nearly a dozen specimens were taken, the largest measuring less than a quarter of an inch in length. They proved to be members of an undescribed species of *Stenetrium* (the first record of this genus from Western Australia), and were remarkable for the relatively immense hand of the male. The only previous record of the genus from Australian waters was that of Haswell (1881) who instituted the genus for two species, *S. armatum* and *S. inerme*, from the coast of New South Wales.

Doubt has since been thrown upon the correctness of the reference of the latter species to this genus, Hansen (1905) considering that it more nearly resembles in its structure an undescribed member of a genus belonging to the Janiridae, while Stebbing (1905) suggests that it belongs to the genus *Notasellus* Pfeller. If *S. inerme* is not correctly assigned to this genus, the Western Australian species from Dongarra described below is the second species belonging to this genus to be recorded from Australia. Since the publication of Haswell's original description of *S. armatum*, however, a number of species have been described from other parts of the world, the genus appearing to be practically cosmopolitan.

Learning that I had recently found and described a new Western Australian Stenetriid, Mr. Glauert very kindly permitted me to examine some specimens from Rottneest, obtained during the carrying out of a survey of the fauna of that Island. In the course of this work a number of littoral forms have been taken upon at least two occasions (Sept., 1927 and 1928) from the reef at Bathurst Point, near the north-east corner of the Island.

The material collected in 1927 proved to include no fewer than a dozen specimens of *Stenetrium*, eleven of which appeared at first sight to resemble my Dongarra form so closely that I was inclined to regard them as of subspecific rank only. A more careful examination, however, has revealed so many differences, warranting its recognition as a distinct species, and it is described below under the name of *S. spinirostrum*. In the same tube was a single specimen, sadly mutilated, but, nevertheless, very readily distinguished from both the two other Western Australian forms. A description of this, necessarily somewhat incomplete, is given under the name *S. truncatum*.



All the material collected in 1927, was taken immediately after very heavy weather and, as no further examples of this species have since been secured, it is possible that it was a stray from deeper water washed on to the shore on some detached fragment of weed or reef.

The material taken in 1928 is still more abundant, including some twenty-three specimens in all; of these, nine are examples of *S. spinirostrum*, the remaining fourteen belonging to a species not previously taken and which I have named in compliment to Mr. Glauert. Apparently these two species live side by side, since they were both collected, not infrequently, from beneath the same stone just below tide mark. The smaller size, reduced condition of the eyes and remarkable development of the setae upon the much less developed gnathopods of the male, as well as its distinctive coloration, render it easily distinguishable from *S. spinirostrum*.

STENETRIUM MACROCHIRIUM, n. sp. Text-figures 1-10.

The head broader than long (3 : 2), with the anterior border on the whole concave, produced into a short rostrum, terminating in a bluntly-pointed apex not reaching to the anterior limit of epistome and armed on either side with minute spinules; produced laterally into a forwardly-directed flat spine-like process with lateral border twice notched or dentate; a broad triangular process midway between the rostrum and lateral process, forming the inner boundary of a deep incisure above the base of second antenna. The eyes long, curved and raised into a narrow ridge, practically forming the dorso-lateral border of head; with two rows of ten ocelli.

The *first antenna* is very short; its peduncle with a stout basal joint produced into a distal process on its lateral border; the second and third joints subequal; the flagellum short, in the female little more than half the length of peduncle and with seven joints, in the male longer and with fourteen joints.

The *second antenna* is approximately as long as the body; the basal joint of the peduncle produced into a curved process extending distally to the mid region of the third joint and notched near its apex, the second joint also produced; the flagellum longer than the peduncle with more than a hundred joints.

The *first peraeopods* (Gnathopods) differ markedly in the two sexes. In the male they are as long as the body; the coxa produced as the epimeral lobe projecting forwardly, marked off from tergum by a well defined ridge, the basos very stout, as long as or longer than the combined length of basos, ischios and meros of succeeding limbs; the ischios and meros expanded with the anterior border produced distally into pointed lobes; the carpos squarish, not produced; the propod, subquadrangular, considerably longer than the combined length of the three preceding joints (nearly as long as basos), longer than broad (6 : 5), both upper and lower margins very setose, the palm transverse, set with three stout conical spines; the dactyl stout, bent, slightly longer than the palm, larger than the basos of succeeding paraeopods, the upper margin strongly convex, both

Text-figures 1-10.—*Stenetrium macrochirium*, n. sp.

- 1.—Male, in side view. 2.—Female, in dorsal view. 2a.—Portion of head of same, more highly magnified. 3a.—"Hand" of male, in mesial view.
- 3b.—Gnathopod of female. 4.—Coxa of fourth peraeopod. 5.—Coxa of fifth peraeopod. 6.—Coxa of sixth peraeopod. 7.—First pleopod of male.
- 8.—Second pleopod of male. 9.—Second pleopods (operculum) of female.
- 10.—Uropod of female.

margins setose. In the female this appendage is much smaller and the hand less extravagantly developed; the palm slightly oblique, defined by a strong spine and set with numerous setae, the dactyl beset with short pectinate spines along the distal half of its palmar border.

The *pleo-telson* is somewhat broader than long, its lateral margin smooth, broken only by a single notch defined by a well-developed tooth-like spine; the posterior margin strongly convex and sinuate.

The *uropoda* in the male are considerably less than half as long as the *pleo-telson*; in the female about half the length of the abdominal shield; in both, the endopod is slightly longer than the exopod.

Length.—Maximum 5.9 mm. (both male and ovigerous female).

Colour.—Generally of a pale grey, due to abundant scattered pigment on the yellowish-white background. Vestiges of a divided dark median stripe on segments 2, 3 and 5. In spirit, yellowish.

Occurrence.—Taken in April, 1928, crawling upon seaweed growing upon the piles of the pier at Dongarra, W.A. (lat. 29° S.); 3 males, 3 ovigerous females, 3 non-ovigerous females, 2 juvenile and 1 larva.

Detailed Description.

Apart from the greatly developed "hand" of the male, the sexual dimorphism is not very marked. The body is parallel-sided, the head and *pleo-telson* being slightly narrower than the *peraeon*. The maximum length was just less than 6 mm., one male and one female being presumably full grown and of equal size, the width barely exceeding 2 mm., and not being measurably wider even in the ovigerous female.

The *uropods* appear, in the two largest specimens, to be relatively longer in the female than the male, but with such scanty material one cannot be certain that this is a constant feature.

Upon the anterior border of the head (Text-fig. 2) there is a well-developed bluntly-pointed rostrum—the structure to which Hansen referred as the frontal plate. In *S. macrochirum* this arises almost from the level of the dorsal surface, so that there is practically no boundary line between dorsum and rostrum. The rostrum is free from pigment and its sides (but not its tip) are set with a number of minute spinules.

On either side the triangular process which overhangs the insertion of the first antenna and lies above and nearly mesially to the base of the second antenna seems, with the antero-lateral process, to frame the base of the second antenna. The eyes are large and form conspicuous curved black elongated ridges marking the dorso-lateral borders of the head; the lateral processes, though springing behind from the dorsal surface, slope downwards antero-laterally, to project forwardly well below the eyes. There is no trace of a suture dorsally between the head and the first thoracic segment. The distribution of the pigment suggests, however, the original distinctness of the two regions and it would appear that the lateral process might have been related primarily to the maxilliped segment; on the other hand it may quite well represent the post-mandibular process of *Asellus*, which is probably anterior to the segment of the maxilliped.

The *peraeon segments* (Text-figs. 1, 2) are subequal, the first and the fifth being actually shortest, the seventh, by a very little, the longest. In the ovigerous female the greatest width is attained by the third segment. In the first (Text-fig. 2a) and second *peraeon* segments the antero-lateral angles are produced into

short flattened plates, forwardly directed, the lateral border being notched or dentated, thus closely resembling the similar processes from the head and the basal joint of the second antenna and, like those, largely free from pigment.

It seems probable that these processes represent the coxopodites (or perhaps the precoxae) of peraeopods one and two, more or less fused with their respective segments. The process lies at a slightly different level from the rest of the lateral margin and, in the case of the first peraeon segment, the junction is marked by a well defined suture. In the only female dissected, the process came away with the gnathopod when that limb was removed (Text-fig. 3*b*).

Upon the tergum of the third segment these lobes are more slightly developed and the coxopodite projects a little beyond the lateral border, but upon the three succeeding segments the coxopodites may be seen, in dorsal view, as distinct rounded and freely projecting lobes. As in *Asellus* (Racovitza, 1920) and in *Phreatoicus*, these joints tend to shift progressively more posteriorly. In the third and fourth (Text-figs. 2, 4) the coxopodite occupies a position approximately half-way between anterior and posterior borders of its related segment. The fifth (Text-fig. 5) has come to lie at the posterior angle, and is exposed by an incisure of the postero-lateral margin. The sixth is definitely posterior (Text-figs. 2, 6) and appears in the gap between sixth and seventh tergites—while in the seventh segment the postero-lateral lobe projects sharply backwards in a flattened, acutely-pointed triangular process, which is devoid of pigment and which overlies the coxal portion of the related limb, only just visible in an incisure upon the posterior margin of the tergum.

Beddard has figured and described the occurrence of epimera in *S. haswelli*, differing somewhat from the condition found in my species. Miss Richardson, too, mentions the existence of these epimera in *S. stebbingi*, but, so far as I can discover, no other author makes any reference to these structures.

The pleo-telson has the characteristic shape of a broad short shield. An anterior pleon segment is marked off, but is not easily distinguished, appearing to be largely overhung by the hind border of the last peraeon segment.

The shield is broader than long (6 : 5) and shows a well developed latero-terminal notch behind which is a single minute serrulation; the shield then narrows rapidly to the median rounded and subtriangular terminal region.

Upon the dorsal surface generally are sparsely scattered long flexible setae; the telson bears a thin fringe of shorter setae, while from the anteriorly projecting lobes of first antenna, head and anterior peraeon segments arise a conspicuous set of stout spinose setae which project forwardly and upwards. These are represented on the more posterior segments by a few (two or three) long stiff setae which may arise from the margin of the tergal plate or from the coxopodite.

On the ventral surface there is a strongly-developed flattened hook-like median process arising from the sternum of first peraeon segment (Text-fig. 1) and projecting forwardly, and a smaller process upon the second. Upon the hinder two or three peraeon sternites are similar processes projecting backwardly. Barnard (1920) notes the existence of such "keels" in the South African species of *Stenetrium*, and I find similar structures in *Hyperoedesisipus* and *Phreatoicoides*. In *Koonunga*, Sayce describes a similar condition.

Appendages.—The first antenna in the male stretches to a point about two-thirds of the length of the fifth joint of the peduncle of second antenna and has a length rather less than half of that peduncle. Its peduncle has the usual three joints, of which the first is much broader than those succeeding, having a width

equal to two-thirds of the combined length of second and third joint, and is considerably produced on its outer border. The second joint is but two-thirds the length and half the width of the first joint. The third peduncular joint is still less robust, its length not quite equal to that of the preceding joint. The flagellum is slender and short, subequal to the peduncle in length and usually with fourteen joints. In the female the appendage is smaller (Text-figs. 2, 2a), having a length barely two-thirds of the width of the head; the flagellum is relatively much shorter, equalling the length of distal two joints of peduncle only, and has fewer (6-7) joints.

The *second antennae* are peculiarly fragile. When not almost entirely lost they are generally mutilated, but they probably reach a length equal to that of the body. In a male 4.75 mm. long the incomplete antenna measured 4.2 mm.

As is so generally the case in the Asellota, the peduncle has six joints, of which the four proximal are quite short and stouter than the distal two. The second and fourth are particularly short. The first joint, as already noted, has developed on its outer border a conspicuous forwardly-directed spine-like process (Text-fig. 2a) strikingly like that arising from head and anterior pereopod segments. The third joint is very oblique, bearing upon its short external border the inrolled scale-like exopodite. Mesially it extends considerably, so that the fourth joint appears to arise almost laterally. The two succeeding joints are more slender, the sixth being slightly the longer, having a length equal to the proximal four joints combined. The flagellum, somewhat longer than the peduncle, is slender and tapering. From it setae arise at intervals in little tufts, as they normally do in many Crustacea from the end of the joints. But in this case segmentation has produced a large number of disc-like joints of gradually lessening dimensions and the setae are apparently borne on some only of these. In one specimen more than 120 of such joints were counted.

Mouth Parts.—Hansen gives a brief account of the structure of the mouth parts of *S. antillense*, while Stebbing describes those of *S. chiltoni* in some detail. Barnard also has described these appendages in *S. crassimanus* but for the most part little attention has been paid to them. In certain of the appendages the structure is remarkably constant, while in others there are considerable differences between the species.

The *labrum* calls for little comment. It is slightly broader than figured by Stebbing for *S. chiltoni* and much more densely setose apically.

The *right mandible* has a cutting edge with four stout teeth; at its base is a serrated knob which might represent the vestige of the accessory dentate edge. The teeth are spread out upon a flattened distal extremity which is most distinctly marked off from the more proximal region. From the median aspect of its base spring twelve stout curved and pectinate spines of the spine row. The stout molar process curves mesially, its flattened face being covered with stout tooth-like spines; its side is clothed distally by a number (more than twenty) of long curved pectinate setae.

The long three-jointed palp consists of a cylindroidal basal joint with two or three stiff setae distally; the second joint, nearly twice as long, arises from a narrowed base. It bears a short row of stiff setae and two other very long and stout, pinnate upon one side. These latter seem quite characteristic of *Stenetrium*. The third joint of the palp appears as a flattened lamina from the distal part of which a narrow lobe springs obliquely. The lamina is fringed with setae along one edge, the lobe appears to be setose on both margins.

The *left mandible* preserves both cutting edges of almost equal size with four and three teeth respectively. Near the base of the inner plate one very stout seta arises (as in *S. crassimanus*), this being pinnate on its ventral surface. As in the right mandible, the tooth-bearing portion is sharply marked off from the more proximal part of the limb, the rounded distal end of which bears a spine row of six setae, all of which are pinnate along the ventral face; molar and palp are much as on right mandible.

Labium: The median incisure is about as broad as deep, stiff curved setae forming a fringe along the distal two-thirds of the mesial margin. Terminally this margin is slightly excavated and then swells to a rounded apex, set with a curved comb-like set of stiff setae, otherwise the strongly convex outer borders are free from setae.

First maxilla: The rounded distal end of the inner lobe is set terminally with two stout short spines, somewhat spiky or knobbed, and surrounded by many fine setules. A little more proximally is one long curved seta.

The outer lobe is truncated; its end covered by ten (or perhaps more) stout serrated spines. On the mesial border distally are a few fine setules.

Second maxilla: Outer lobes equalling the inner lobe in length and set terminally with four stout pectinate setae with a few fine setules on the inner borders; inner lobe narrowing slightly towards the apex and set along its distal two-thirds with about seven stiffly curved setae, each pinnate along the distal border and with a stiff setule springing from the base. Terminally are four similar setae closely grouped. In the appendage of the opposite side, the distal clusters of setules on the mesial borders of the outer lobes appear wanting.

The *maxillipedes* seem closely to resemble those of other species figured. The third joint (first of the palp) is perhaps a little shorter than in *S. antillense* or *S. chiltoni*. The mesial edge of the inner plate terminates in two short adpressed spines and its transverse border is set with about seven curved setae (as in *S. chiltoni*). These, however, seem to arise from a broad base and there are no broad spine-like setae, like those described as occurring in *S. antillense* or *S. crassimanus*. Upon one side are six coupling hooks, four large and two slightly smaller; upon the opposite appendage there are but three larger hooks and only five in all. In the female I find only two large and two much smaller hooks separated by a distinct gap from which one hook has evidently been torn.

The epipod reaches practically to the level of the distal end of the inner lobe, narrows sharply, near its end, to a pointed extremity set with three or four evenly spaced setules.

The *gnathopoda*: In the male (Text-figs. 1, 3a) the tremendous development of this first pair of appendages gives the animal a most ungainly appearance, all of the joints sharing in the hypertrophy. The coxopodite is visible beneath the lateral margin of the tergal plate, but on removing the limb the separation occurred at the proximal end of the basos. In the female the coxopodite with epimeral extension came away with the limb, suggesting either the existence of a joint with some degree of mobility or a not very firm soldering of the limb to the segment in that region.

The large basos of the appendage in the male is flattened, appearing club-shaped, and is followed by elongated and enlarged ischios, meros and carpos, the two latter set with a ventral fringe of short stiff setae.

It is, however, in the distal two joints that the extraordinary development appears. The propodus is as long and almost as large as the pleo-telson; roughly triangular in shape with the base distal so as to afford a nearly straight palm.

Posteriorly (ventrally) the palm is limited by a very stout tooth-like spine, a second and very similar conical spine arising more proximally at a point about one-third of the length of the palm (Text-fig. 3a). A third stout spine with rounded end appears nearer to the dactyl, at the origin of which the palm arises into a triangular elevation. Externally the base of the dactyl is hidden by a very large triangular process of the propodus. The dactyl is very stout, nearly as long as the propodus, and strongly convex anteriorly but sharply bent upon its palmar edge. It shuts down upon the propodus upon its inner side and the tip of the dactyl does not visibly project. Both joints are very setose, the setae arising from the posterior margin of the propodus in small closely-set tufts are mingled with longer and more flexible setae arising from the internal surface of the joint and form a dense fringe along the border.

In the female the limb (Text-fig. 3b) differs from that of the male principally in its much smaller size. The coxa is produced into the long triangular lobe so conspicuous as the forwardly-projecting process of the first peraeon segment. The basos is stout and almost as long as the three succeeding joints; the ischios is expanded antero-distally into a broad compressed process; the meros shows a much more elongated process ending in a point bearing a stout seta. The carpos lacks this extension, its upper distal angle being subrectangular.

The propod is subquadrangular in shape, practically twice as long as deep, the upper border slightly convex, with few setae, lower border straight, densely fringed with setae; the palm slightly oblique with numerous setae forming a continuation of the ventral fringe, and quite obscuring a long spine which defines the palm. This fringe of setae extends along the ventral border of meros, carpos and propod, some being long and flexible, but mostly stiff and pectinate along one side.

At the base of the dactyl is a tuft of short flexible setae. The dactyl itself is short and curved, rather longer than the palm and with a stout terminal claw. Its convex upper border bears numerous tufts of short setules, the palmar surface set along its distal half with short stout spine-like setae, pectinate along one edge.

The *pleopods* have the arrangement and appearance described by Hansen as characteristic for the genus. In the male the members of the first pair (Text-fig. 7) are united by the fusion of the sympodite, from which springs a pair of irregular four sided plates. (Racovitza (1920) identifies these in *Asellus* as exopodites.)

In my species this plate is but sparsely setose terminally, a small portion of lateral margin being infolded. From the sympodite at the inner end of the base of the exopodite is a paired triangular process which may, perhaps, represent the vestige of a disappearing endopodite, a structure which seems elsewhere wholly to have vanished in the *Asellota*, although it is persistent and well developed in the Phreatoicidea. In several species of *Stenetrium* this process appears to be represented only by a stiff seta.

The second pleopod in the male (Text-fig. 8) differs but little from those figured by Hansen. It is relatively rather large, reaching an extreme length of nearly four-fifths of that of pleopod 1, the sympodite alone being more than half the length of that limb. The inner geniculate appendage has a rounder inner

curve, the second joint is somewhat narrow and ends in a sharp point slightly hooked terminally. The rounded exopodite has the appearance of a short scroll.

The third and succeeding appendages appear to be quite typical and are similar in both sexes, but in the female, as in all *Asellota*, only one of the two preceding appendages has been retained.

Racovitza, discussing this condition in *Asellus*, has pointed out that systematists generally have assumed, erroneously, that this persistent structure is the first pleopod and that it is the second which has been aborted. For the *Asellidae* he has been able to show that it is really the first which is lost and the second which persists. Although I have been unable, in my much smaller specimens, to distinguish the sternites of first and second pleon segments, I see no reason to doubt that the same conditions hold in *Stenetrium* as in *Asellus*, and that in the former genus, also, it is the first pleopod which is missing.

The appendage (Text-fig. 9), be it first or second, is the result, apparently, of the fusion, much more complete than in the case of the first pleopods of the male, of a pair of appendages to form a small operculum. Barnard records for South African species that this operculum has a bifid tip, a detail previously noted by Haswell (1881; 1885) for *S. armatum*.

In *S. macrochirium* it is shield-shaped with a broad base, widening slightly and then narrowing to curve out into a lateral convexity on either side, thence to taper away to a median-pointed apex without trace of division; the maximum width is but two-thirds of the length.

Uropods (Text-fig. 10): These are short, flattened structures having a length equal to, or more than, half that of the abdominal shield. They arise from the ventral surface near the middle line on either side of the rounded terminal projection. The peduncle is broad and widens distally to bear the flattened rami, the inner of which is slightly longer than the outer and is one and a half times the length of the peduncle. The margins of both rami are notched, long setae arising in the notches, and terminally there is on each ramus a tuft of very long setae, broken off short in many of my specimens.

STENETRIUM SPINIROSTRUM, n. sp. Text-figs. 23-25.

In general appearance very like *S. macrochirium*, from which it may readily be distinguished by the following characters:

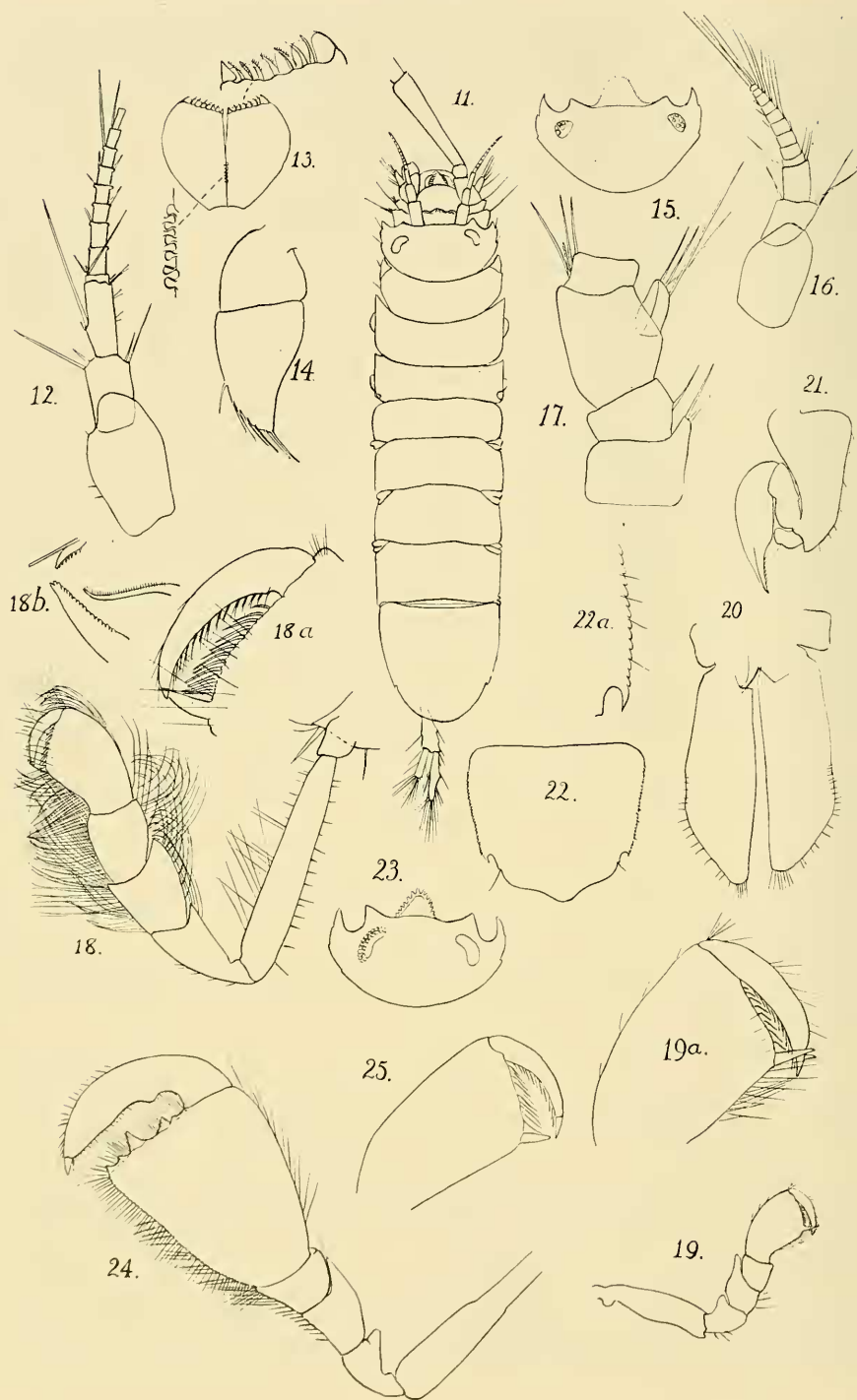
Head twice as broad as long, anterior margin sinuate, rostrum smaller, subtriangular and completely fringed with short spinules, anterior triangular processes less strongly developed.

Eyes with two rows of twelve ocelli.

First antenna relatively longer, peduncle without a strongly developed process on basal joint, second joint short, third nearly as long as first, first and second pigmented; flagellum with about seven joints in female and as many as seventeen in the male.

Second antenna not as long as the body, process upon first joint not extending much beyond second which is not produced; exopodite small in female, larger in male. Pigment developed upon first and third joints. Flagellum as long as peduncle (?) with about seventy joints.

First peraeopod: In the male, the basos is relatively shorter (as long as propod), the meros is much more definitely produced into a pointed process; the propod has upper and lower borders equal, almost straight and a little longer than the palm. The large spine, which in *S. macrochirium* bounds the palm, is



usually replaced by two low conical spines, although in some specimens upon one or other of the hands the single large spine is retained. The actual palm is relatively longer and the dactyl is longer still, the tip projecting well beyond the propod when the "hand" is closed. Upon its concave border, near its articulation, there is a prominent swelling. In the female there is little difference between the gnathopoda in the two species. On the palm there are nine or ten long and stiffly curved setae, pectinate upon the distal edge, while the inner (concave) border of the dactyl is furnished along its entire length with short and stout pectinate setae. Such spines and setae appear to be of very general occurrence upon palm and dactyl in the female Stenetriids.

The first *pleopods* in the male differ only in the number and position of the setae upon the exopodite. Upon the lateral border of the sympodite, also, there are three stiff setae not represented in *S. macrochirium*. The third pleopods have the endopodite considerably wider. The second pleopod of the female is considerably larger relatively and has many more short fringing setae.

Length.—The largest specimens (both male and ovigerous female) reach a length of 7 mm.

Colour.—Closely resembling *S. macrochirium*, the pigment spots are apparently fewer and larger. Upon segments two and three the group of spots which suggest a short paired dorsal line have actually coalesced with a definite double stripe.

Occurrence.—Collected by Mr. L. Glauert at Bathurst Pt., Rottnest Is., in September, 1927, and again a year later. In all twenty specimens were secured, these being taken under stones and on fragments broken from the reef.

STENETRIUM TRUNCATUM, n. sp. Text-figs. 11-14.

Body narrow, the length being four times the width, smooth and almost devoid of setae.

Head twice as wide as long, anterior border transverse, almost straight, rostrum broad and short, its length but two-fifths its width, the anterior margin marked by a row of pigment spots, the rest of the dorsal surface of the head being practically un-pigmented. Neither anterior nor antero-lateral processes of the head very strongly developed, lateral border bidentate.

Eyes reniform, with two curved rows of ocelli, about eighteen in all.

First antenna short, reaching nearly to the end of the first quarter of the fifth joint of peduncle of second antenna. Basal joint stout, with distal process, second and third joints subequal and progressively more slender and together as long as

Text-figures 11-14.—*Stenetrium truncatum*, n. sp.

11.—Dorsal view. 12.—First antenna. 13.—Inner plates of maxilliped.
14.—Fifth pleopod.

Text-figures 15-22.—*Stenetrium glauerti*, n. sp.

15.—Dorsal view of head. 16.—First antenna. 17.—Base of peduncle of second antenna. 18.—Gnathopod of male. 18*a*.—Palm, more highly magnified. 18*b*.—Spine and setae from palm and dactyl. 19.—Gnathopod of female (same magnification as Fig. 18). 19*a*.—Hand of same, more highly magnified. 20.—First pleopod of male. 21.—Second pleopod of same. 22.—Pleo-telson of same. 22*a*.—Lateral border of same, more highly magnified.

Text-figures 23-25.—*Stenetrium spinirostrum*, n. sp.

23.—Head on dorsal view. 24.—Gnathopod of male. 25.—Gnathopod of female.

basal joint. Flagellum short, as long as combined length of first and second joints of peduncle, with nine or ten articles, apparently not quite complete.

Second antenna—only one preserved and this not complete. Probably not as long as body; neither first nor second joints of the peduncle produced, exopodite scale short; broken flagellum with 86 joints.

Maxilliped appears to agree quite well with Hansen's description of this limb in *S. antillense*, the inner lobe truncate and set with a single median spine-tooth and laterally a number of thin scale-like setae with one edge pinnate. A row of coupling hooks well developed and linking the two lobes so firmly that an attempt to separate the maxillipedes caused the united lobes to break away. In several of my specimens I have noted single hooks carried away from their attachment. These are apparently the structures described by Beddard as possibly of a sensory nature.

Peraeopods: All but one of the appendages of the peraeon are lost, being broken off at the distal end of the basos. The single limb has the usual characters, including the bi-unguiculate dactyl.

Pleopods: I am unable to determine the sex of my specimen, the first and second (or perhaps the second only) of the pleopods being lost. There are no signs of brood lamellae and from the many-jointed condition of the flagellum of the first antennae I expected to find the specimen a male. I failed, however, to make out the male appendages which in *S. macrochirum* are well developed and easily recognized.

The fifth pleopods are of interest, inasmuch as in them (alone, so far as I can discover in Stenetriids) the single lamella shows a division into two joints, as is usual for the exopodite in the third and fourth pleopods.

Pleo-telson slightly longer than broad, with the curved margin almost unbroken, the paired lateral incisure being very slightly developed; the margin generally smooth, marginal setae practically absent.

Uropod unusually long, three-fourths the length of the shield.

Length, 5.5 mm.; *width*, 1.3 mm.

Colour.—In spirit a creamy-white with very faint indication of pigment spots, sparsely scattered, probably scarcely visible in life, since Mr. Glauert informs me that some of the specimens were noted as being very light, almost white.

Occurrence.—Under stones below tide marks at Bathurst Pt., Rottnest Island, W.A., one specimen taken in September, 1927.

Remarks.—The species is readily distinguished from the other Western Australian forms by the shape of the rostrum, a feature which separates it also from *S. haswelli* Beddard, *S. stebbingi* Richardson, *S. fractum* Chilton, *S. antillense* Hansen, *S. chiltoni* Stebbing, *S. crassimanus* Barnard and *S. sudhana* Barnard.

A truncated rostrum such as that of *S. truncatum* is found, however, in the Eastern Australian species *S. armatum* Haswell, from which it differs in the shape of the pleo-telson.

The East Indian species, *S. siamense*, has a somewhat similar rostrum, but is altogether distinct from *S. truncatum* in the shape of its head which lacks antero-lateral and anterior processes and in its small rounded eye.

S. longicorne, from the Mediterranean, and the West Indian *S. antillense* are likewise described as having the rostrum transverse and wider than long. In each of these, however, the anterior rostral border is figured as concave and, in addition, there are differences in the basal joint of first antenna and in the condition of the pleo-telson.

Nobili has described very briefly and without figures two species of *Stenetrium* from the Touamotou Islands (Low Archipelago), both of which species have the rostrum transverse and truncated. From these it is less easy to distinguish *S. truncatum* owing to the imperfection of my specimen and the brevity of Nobili's description. There appear to be differences, however, in shape and proportion of head, length and number of joints of antenna, etc.

S. truncatum comes nearest, apparently, to some of the South African species described by Barnard.

From *S. dagama*, to which it bears considerable resemblance, it is distinguished by its proportions (length 5.5 mm., width 1.3 mm., or 4:1), shape of head, joints of antennular flagellum and shape of pleo-telson; and, as already noted, it appears to differ from all described forms in the retention of the two-jointed condition of the exopodite of the fifth pleopod.

STENETRIUM GLAUERTI, n. sp. Text-figs. 15-22.

Head not quite twice as broad as long, anterior margin slightly sinuate, rostrum subconical with rounded apex, fringed with numerous minute spinules and with its upper surface also spinulose; anterior triangular processes not very strongly developed, antero-lateral process produced in usual manner.

Eyes nearly semicircular, with few (6-7) ocelli.

First antenna very short; basal joint stout with moderate distal process, second and third joints progressively shorter, their combined length barely equal to that of basal first joint. Flagellum in the male with nine joints not as long as basal joint.

Second antenna not as long as the body; the basal joint of peduncle produced into a slight process reaching to about middle of second joint; third joint stout, as long as two first joints combined; fifth and sixth joints subequal; flagellum longer than the peduncle.

First peraeopods (gnathopod) differ markedly in the two sexes. In the male with basos long and slender and bearing a number of long flexible setae upon its anterior border; ischios and meros with dorsal border produced distally into a pointed process; carpos not so produced; both upper and lower borders of these two joints set with long flexible setae, giving a very hairy appearance to the distal portion of the limb. Carpos relatively much larger than in other Western Australian species; propod not greatly enlarged and differing little except in size from that of the female (Text-figs. 18, 19). Its greatest length is almost twice its width, the somewhat oblique palm being defined by a stout spine, serrated along its palmar border. Dactyl curved, slightly longer than the palm, the palmar border of both propod and dactyl being set with pectinate spines similar to those described as occurring upon these joints in the female of *S. macrochirium* and *S. spinirostrum*. In the female the whole appendage is generally similar but much smaller.

The *first pleopods* in the male relatively much longer and narrower than in the other Western Australian species and, like those, showing the triangular lobes upon the sympodite which I have suggested may be the vestige of the endopodites.

The *second pleopods* show the sympodite of the usual form, but the exopodite is rather larger and curved mesially. The second joint of the exopodite is drawn out in a long point which is set barb-wise with proximally directed setae.

The opercular scale (fused second pleopods) in the female differs in no important respect from that of the other species above described.

Pleo-telson slightly broader than long, with well-defined lateral notch which is followed by a small serration bearing a stiff seta; the posterior margin is sinuate, with a rounded subtriangular terminal region.

The lateral margins are finely serrulate along their entire length and a few short setae occur. In this, as in the other species, a linear ring, such as that described by Stebbing for *S. chiltoni*, breaks away when dissecting out the pleopods. It is probably, as Stebbing suggests, a reduced anterior free pleon segment.

Uropod about half the length of pleo-telson.

The serrulate border of the pleo-telson distinguishes it not only from the other Australian species of this genus, but from all other Stenetriids with a conical or sub-triangular rostrum. *S. serratum* has but four or five serrations on either side and these are as large, almost, as that which bounds the latero-terminal notch. The small eye with very few ocelli, the extremely setose condition of the gnathopod in the male and, also, the barbed condition of the endopodite of the second pleopod in the male appear to be other features peculiar to this species.

Size.—Largest male, 5 mm.; ovigerous females slightly smaller.

Colour.—In spirit creamy-white, with two orange bands on fifth joint of second antenna, the more proximal of which occurs at the point where the flagellum of first antenna lies against it and this flagellum takes on the same colour. The sixth joint of second antenna also has two orange bands, this colour likewise marking the extremity of some of the limbs including the uropods.

Occurrence.—At Bathurst Pt., Rottneest Island, W.A.; 4 males, 6 ovigerous females, 1 non-ovigerous female and 3 juveniles taken by Mr. Glauert in September, 1928.

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